DOCUMENT RESUME

VT 008 024

ED 028 281

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Pilot Program Studying Use of Electronic Equipment in the Stenography Classroom.

Montclair State Coll., N.J. Dept. of Business Education.; Rider Coll., Trenton, N.J. Dept. of Business Education.; Trenton State Coll., N.J. Dept. of Business Education.
Spons Agency-New Jersey State Dept. of Education, Trenton.
Pub Date 68
Note-32p.
Available from-Division of Vocational Education, State Department of Education, Trenton, New Jersey 08625
EDRS Price MF-$0.25 HC-$1.70
Descriptors-*Electromechanical Aids, *Individual Instruction, *Inservice Teacher Education, *Instructional Improvement, Instructional Technology, Pilot Projects, Programed Materials, Research Needs, *Stenography

Students in stenography classes show marked differences in learning, and a teacher of stenography must devote the majority of class time to dictation which may render him unable to provide the individual instruction needed to meet the individual needs of his students. The major purpose of this study was to investigate the extent to which electronic equipment can assist in the instruction of stenography, and to discover the problem arising from the use of such equipment on the part of the teacher and the student. Objectives were: (1) to provide an opportunity for teachers to become familiar with the use of electronic equipment, (2) to determine teacher reaction, student reaction, and desirable facilities, (3) to determine what variations in teaching method and techniques evolve, (4) to determine the extent to which electronic equipment may be employed to provide individual instruction, and (5) to suggest possible research in the use of electronic equipment in the stenography classroom. Over 200 shorthand teachers and department chairmen from approximately 175 schools had personal opportunity to consider the use of multi-channel equipment in stenography classroom, plus hands-on experience with the equipment. Findings for the objectives and some results of follow-up surveys are given. (MM)

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REPORT

Pilot Program Studying Use of Electronic Equipment in the Stenography Classroom

A Study Sponsored by the
Division of Vocational Education
State Department of Education
Trenton, New Jersey

VT008024

REPORT

Pilot Program Studying Use of Electronic Equipment in the Stenography Classroom.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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A Study Sponsored by the
Division of Vocational Education,
State Department of Education,
Trenton, New Jersey

1968

FOREWORD

With a total of 570 pilot programs already being conducted in New Jersey under the sponsorship of the Division of Vocational Education of the State Department of Education, imaginative educators in our state have once again successfully launched a pilot program that may become a model in vocational education throughout the country. In February, 1967, the Pilot Program Studying Use of Electronic Equipment in the Stenography Classroom completed its pilot year.

With the publication and distribution of this report, teachers and administrators involved in business education at the secondary school level and teacher-educators in colleges and universities will have tangible evidence that electronic equipment is a viable option in the stenographic classroom.

The program has been tested in nine New Jersey high schools under the direction and supervision of Montclair State College, Rider College, and Trenton State College. On February 1, 1966, the program was initiated at the following high schools: Atlantic City, Bloomfield, Florence Township Memorial, Hamilton Township High School West, Parsippany-Troy Hills, Princeton, Scotch Plains-Fanwood, Trenton Central and Woodrow Wilson in Camden. The advantages and disadvantages of the use of electronic equipment in the stenography classroom have been realistically appraised.

The committee appointed to structure this pilot study following approval and funding on June 2, 1965, by the State Board of Education, included Dr. Elizabeth V. Tonne of Montclair State College, Dr. Walter A. Brower of Rider College, and Dr. Michael A. Travers of Trenton State College. Mr. Alvin Weitz, State Supervisor of Business Education, served as consultant from the Division of Vocational Education.

The contribution of many persons is acknowledged. In addition to those named above, special thanks are extended to Dr. Gilbert Kahn of Montclair State College, Professor Grace B.

Donnelly of Rider College, and Professor Carmela C. Kingston of Trenton State College for their contributions to this project by serving as consultants. Special acknowledgement is given to the late Dr. Carl B. Zoerner of Rider College, whose foresight and creativeness provided the impetus for the inauguration of this study.

It is believed that this program has been very worthwhile and that it should continue, not only in New Jersey, but elsewhere, so that stenographic students can better learn to take their place in a technological world.

Robert M. Worthington
Assistant Commissioner of Education
Division of Vocational Education
State of New Jersey

July, 1968

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REPORT

PILOT PROGRAM STUDYING USE OF ELECTRONIC EQUIPMENT

in the

STENOGRAPHY CLASSROOM

-- conducted by --

DEPARTMENTS OF BUSINESS EDUCATION

Montclair State College
Upper Montclair, New Jersey.. Dr. M. Herbert Freeman, Chairman
Dr. Gilbert Kahn, Consultant

Rider College
Trenton, New Jersey ..... Dr. Walter A. Brower, Chairman
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Trenton, New Jersey..... Dr. Michael A. Travers, Chairman
Prof. Carmela C. Kingston, Consultant

-- in cooperation with --

NEW JERSEY STATE DEPARTMENT OF EDUCATION

Division of Vocational Education.... Alvin Weitz, Supervisor of Business Education; Project Coordinator

-- prepared by --

Dr. Elizabeth Van Derveer Tonne

1968

INTRODUCTION

For several reasons, many of those who take stenography do not enter employment as stenographers. This outcome is no more surprising than is the fact that many students who take college preparatory courses do not enter college. The gap between training and employment should nevertheless be reduced as much as possible. Techniques which will improve the teaching and the learning possibilities should receive careful attention. It is no surprise therefore that interest in audio equipment, stimulated by the development of the language laboratories, is being given paramount consideration.

This equipment holds out the promise of greater possibilities in individualizing instruction. It also challenges the imagination with its potential for improving fundamental skills so that lack of transcription skills will no longer cause students to fail though they have mastered the symbols and can take dictation.

This pilot project was undertaken to familiarize teachers with equipment, changes in methods, and anticipated outcomes. The report has been written to include not only observations of the pilot project itself, but also to provide some of the background which went into the planning of the project. It includes also an annotated bibliography of some of the many articles on the subject now beginning to appear in business education publications.

PURPOSE OF THE STUDY

The need for teaching the individual at his own pace in the stenography classroom has long been realized by those who teach stenography. Several attempts over the years have been made by teachers to utilize audio equipment--tape recorders, dictating machines, recordplayers--to assist the student in accomplishing his personal potential. Recently, however, Federal aid to vocational education, improved design and lowered prices, and increasing availability of taped materials spurred purchase of equipment for use by inexperienced teachers. Consequently, studies of classroom use of such equipment have become desirable and even necessary.

Preliminary discussion of the problems arising in the teaching of stenography even without equipment indicated to those involved in this project that the following facts must be considered. One, students in stenography classes show marked differences in learning from the beginning of their study. As instruction continues, these differences are compounded with the result that many beginning students are eliminated because they cannot "keep up".

Two, a teacher of stenography must devote the majority of class time to dictation, eyes fixed on the book and the watch. He is probably unable to provide the individual instruction needed to meet the individual needs of his students. He finds it difficult to assist or to demonstrate to the individual at a time such demonstration would mean the most. His class most of the time must function as a "whole" class rather than as a class of individuals each in need of activities to match his own particular development. The teacher must be especially alert if he provides three or more levels of instruction at the same time in this type of classroom. Furthermore, as he dictates to all three groups, he seldom has an opportunity to require oral transcription of the "take". Omission of such supervision inevitably leads to further problems when the typed transcript--the end product--is prepared.

General assumptions therefore might be that use of electronic equipment providing a multi-channel listening station for each student plus a library of tapes paralleling the learning materials

of the student will ultimately relieve the teacher from his close attachment to the book and the watch; that it will make it possible for him to teach the individual; that students can be guided into considerable self-instruction; that it may shorten the learning time for some while making a longer learning time possible for others.

However, use of such equipment will undoubtedly create questions and problems for the teacher. Primarily, therefore, this study was "designed to investigate the extent to which electronic equipment will assist in the instruction of stenography and to discover the problems arising from the use of such equipment on the part of the teacher and the student." [1]

It was further decided to acquaint as many stenography teachers as possible in the State of New Jersey with the uses and problems of stenographic equipment by forming study groups to run similtaneously with the pilot project. Consequently, the objectives finally stated were:

Objectives:

1. To provide an opportunity for teachers to become familiar with the use of electronic equipment in the stenography classroom.
2. To determine teacher reaction to the use of electronic equipment in the stenography classroom.
3. To determine student reaction to the use of electronic equipment in the stenography classroom.
4. To determine desirable facilities (tapes, equipment and equipment storage and maintenance, space) for instruction and homework practice with electronic equipment in the stenography classroom.
5. To determine what variations in teaching method and techniques evolve with the use of electronic equipment.

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[1] Elizabeth T. Van Derveer (Tonne), Walter A. Brower, Michael A. Travers, Research Proposal, "Pilot Program Studying Use of Electonic Equipment in the Stenography Classroom", New Jersey: State Department of Education, Division of Vocational and Technical Education, April 28, 1965, p. 2.

6. To determine the extent to which electronic equipment may be employed to provide individual instruction for (a) the gifted student; (b) the slower learner; (c) the potential drop-out; (d) the absentee.

7. To suggest possible research in the use of electronic equipment in the stenography classroom.

Method of Procedure

This pilot study was designed to involve many teachers and many schools. The general plan of procedure is outlined below:

1. Each of the three colleges participating scheduled a seminar for high school teachers to run concurrently with the pilot study. Attendance was required of teachers of the nine pilot schools involved in the project. In addition, teachers in the areas surrounding the colleges were offered the opportunity to attend with all expenses at the campus paid and with three points graduate credit.

   Hence the project became a focal point for discussion and equipment at each of the colleges was made available for experimentation. The seminars were repeated each semester during the life of the project. An enrollment limitation of thirty was set.

2. Nine high schools known as pilot study centers were selected from the state--three in the north, three in the central, and three in southern New Jersey. (See Appendix A.)

3. The Project Committee consisted of a representative of each of the three participating colleges--Rider College, Montclair State College, and Trenton State College; and a representative from the State Department of Education, Vocational Division, titled the Project Coordinator. The college representatives were the chairmen of the business education departments at the three colleges.

   Each college coordinated the project in one regional area described in Item 1. Rider College was assigned the

three high schools in southern New Jersey; Montclair State College, the three high schools in northern New Jersey; Trenton State College, the three high schools in central New Jersey.

4. Consultants--members of the college faculties--served as liaison between the college and the pilot study centers, observed and assisted the high school teachers, and taught the college seminar referred to in item 1.

5. The pilot center schools served as observational centers for schools in nearby communities.

6. Chairmen and teachers from the pilot centers attended a workshop to study objectives of the project, procedures, and to observe demonstration of some equipment prior to the start of the project itself.

Procedures for selecting the nine pilot study centers are outlined below:

Pilot Study Centers Selection

1. Pilot study centers were recommended to the State Department of Education by the participating colleges using the following criteria:

a. All areas of the state shall be represented.
b. Enrollment in business education in any school selected shall be at least 25% of the school enrollment.
c. One of the three schools selected for each region should be a city school (as defined by the state); one, suburban; one rural or regional.
d. Class size shall be not less than 20.
e. Class shall be the first half of first-year shorthand. (This was extended to include second semester also.)
f. Teachers chosen shall possess a certificate for the teaching of shorthand and have had at least two years of classroom experience in teaching shorthand.
g. Students shall be those regularly enrolled in vocationally oriented shorthand.

2. The Project Co-ordinator will secure the acceptance of the pilot study centers. From this point on, consultants of the participating colleges will work directly with the pilot study centers.

3. Teachers in the area of the pilot study centers will be notified of the project and invited to participate in one seminar held at one particpating college.

Facilities:

1. Pilot Study Center: Each cooperating pilot study center provided adequate and suitable facilities for dictation and transcription within the same room.

2. Where possible, in addition to regular class periods, the room was made available for practice or homework study to coincide with the students' free time.

3. Colleges: The participating colleges met the criteria as specified in items 1 and 2.

4. The electronic equipment was secured by the participating college for each of its three pilot study centers after discussion with the high school personnel.

The personnel of the high schools and colleges directly involved in the project are listed in Appendix A.

Limitations

This study was not an examination of various types of equipment to be used by the teacher for dictation and by the student for receiving dictation. By choice, a variety of equipment was used in the study, but no attempt was made to rank the performance of the equipment nor was any recommendation made concerning purchase of equipment.

This study was confined to the learning of shorthand theory and the development of speed for first-year instruction only. No effort was made to improve the quality of the written transcript.

The project was planned and executed at a time when equipment was being improved and tapes were being revised. As a result, and through no fault of those participating or of the Vocational Division of the State of New Jersey, most of the high schools and colleges involved in the project suffered some handicap during the first semester of the project. For example, first-semester multi-channel tapes were not available for college textbooks nor for those high schools not using reel-to-reel equipment. Therefore, to secure some benefit from multi-channel equipment, teachers were compelled to dictate supplementary tapes. This situation definitely limited the activities of the stenography classes during the first semester of the project.

Definitions

An explanation of some of the terms used in this report may be helpful to the reader.

Console: The control deck for the equipment being used. Here the teacher attaches the recording dictation media--tapes, discs, belt, records--to the equipment; indicates to the class the channels over which the audio is being transmitted; adjusts volume control; starts and stops dictation as desired; and probably is able to speak over a microphone to individuals or group when the occasion demands.

Listening station: The attachment at the student's desk which permits him to listen to one channel-one which he has selected at his teacher's direction or in recognition of his own need. Four or five choices may be available, depending upon the equipment being used. A volume control on the station permits the student to adjust the volume. Listening stations are rapidly becoming transistor-powered with equipment, as a result, becoming "wireless".

Equipment--Dictation-transcribing: Many manufacturers of dictation-transcribing equipment (later referred to as transcribing equipment) have adapted their equipment to multi-channel reception so that it may be used in the stenography classroom.

Usually four or more pieces of transcribing equipment are placed on a console which, at the time of this project, was at-

tached to a wired system. This arrangement permitted the use of thirty or more listening stations in the classroom. Recording media may be disc, belt, or tape. In any case, the tapes prepared by the Gregg Publishing Division, publisher of Gregg textbooks and audio materials, must be rerecorded on media fitting the transcribing equipment. There is inevitable delay between Gregg production and such rerecording. Such equipment, however, may also be used to good advantage in office practice for machine transcribing practice.

This type of equipment was represented in this project.

Equipment--Reel-to-reel: Commonly called a tape recorder, equipment for the stenography classroom consists of a movable console and cabinet, four or five tape recorders plus outlets for other media, plugged into an audio system. At the time of this project, the reel-to-reel equipment was attached to a wired system.

This equipment was represented in this project.

Equipment--Recordplayer: Recordplayers can be used for multi-channel dictation or as one of the media when attached to a console.

This equipment was not used in this study.

Equipment--Wireless: A small broadcasting unit which defines the broadcast area by means of a "loop"--usually circling the room in which the equipment is to be used. Listening stations at the time of this project were battery-powered.

This type of equipment was represented in this project.

Recording Media: The type of media required for use with the equipment involved. This may be tape (with speed varying from 1 7/8 to 7 1/2 rpm), disc, belt, record. Dual-track tape is in use for most reel-to-reel instructional tapes available. However, some wireless equipment uses tapes with twenty-two tracks.

Tapes--Dictation: These are tapes which follow lesson materials in the Gregg textbooks. These are not usually classified as multi-channel tapes.

Tapes--Multi-channel (Gregg): Professionally dictated tapes for reel-to-reel equipment from the lesson materials of first and

second semester textbooks, of beginning Gregg stenography. Three speeds--low, average, and high--are thus available for every lesson and with all tapes dictated in a speedbuilding pattern used in Gregg materials for many years. Some of these materials were not in complete production at the time of the project.

Tapes--Speedbuilding: Supplementary dictation materials developed for use in late first-year classes and advanced classes.

Study of Current Literature

Since 1959, several articles have been written on the use of multi-channel equipment in the stenography classroom. Reference to the **Business Education Index** will show that few if any articles on this topic appeared prior to that time.

The term "multi-channel" did not appear until the audio equipment truly become "multi-channel" in the early 1960's. Its use in connection with dictated materials became meaningful in 1964 when the first multi-channel dictation tapes were produced for the second book in the teaching of stenography--**Gregg Dictation.**

Many of the articles, annotated in the bibliography of this report, therefore refer to school-designed installations of equipment and teacher-made tapes or records. Most authors seem to agree that the equipment frees the teacher from the tyranny of the stopwatch and the book and makes it possible for him to give individual assistance as needed. Unfortunately, there is little evidence that teachers are breaking away from the "whole class" concept although they are talking "individual" instruction.

The Hosler and Lensing article[2] mentions use of tapes at four different levels utilizing the same dictation materials or multi-channel dictation. This was one of the first experiments with this type of materials. These tapes were teacher-made, used on reel-to-reel equipment for second-semester or speedbuilding practice. Hosler and Lensing state that, although "electronic equipment did not lead to better achievement in this

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[2]Russell J. Hosler and Ellen L. Lensing, "How to Use Multiple-channel Tape Dictation in Shorthand--How to Set Up and Use the Equipment", *Business Education World*, 42:9, September, 1961; "Teaching Procedures and Results", *Business Education World*, 42:10, October, 1961, p. 25.

particular study", problems in the preparation of the taped materials may have had some unfavorable influence on the results.

Ellen Lensing in a later article[3] evaluating the same experiment says that the groups favored taped dictation instruction. She suggests further research "to find techniques for using multiple channel equipment that will result in increased efficiency in developing shorthand skill. Electronic dictation, though it did not lead to better achievement in this study, may be considered a valuable tool to relieve the teacher of routine dictation and to free her for more creative tasks."

Several articles indicate that independent study or required homework with the recorded media should be a part of the instruction program. Mere use of the dictating equipment in the classroom will not be sufficient to change the present status of achievement.

None of the articles discussed application of the multi-channel tapes to first-semester study. This is understandable as the commercially prepared tapes became available only in the fall of 1966. The preparation of these tapes, however, reveals the change in attitude toward taped materials which has evolved since equipment has become more flexible, less expensive, and since more funds have become available for purchase by more schools. The readings annotated in the bibliography indicate that teachers' first interest (even as late as 1967) was in using tapes to build speed. As they have become more experienced in the use of taped materials and equipment, they are beginning to see the value of beginning instruction paced at the student's ability level; hence, the questioning, the interest, and the development of multi-channel tapes for beginning instruction.

Observations of the Project Related to Project Objectives

Objective #1: To provide an opportunity for teachers to become familiar with the use of electronic equipment in the stenography classroom.

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[3]Lensing, Ellen L., "Recorded Multi-Channel Dictation for Shorthand Speed Development", *Journal of Business Education*, 37:339, May, 1962.

a. A total of 213 New Jersey teachers participated in the nine seminars conducted at the three colleges during the period the project was under study. If possible, each seminar group was limited to a total of 30 with attendance from any single high school restricted to one person a semester.

b. A total of 174 schools in the State of New Jersey were represented by the attending teachers. Interest remained so high that post-project seminars were set up for the school year 1967-68.

c. The general response of teachers attending was most enthusiastic and appreciative of the experience the seminar afforded.

d. The faculties also believed that the seminars were of definite benefit because those attending were personally concerned about the potential values of the use of the equipment in their schools, about their own abilities to use the equipment effectively, and about possible purchase some time in the future. The seminars provided opportunity for objective discussion of problems, fears, and costs as well as experimentation with a variety of equipment.

e. Teachers learned to operate the equipment; to prepare tapes; to teach lessons using the equipment. They studied and discussed use of equipment for all types of students; listened to experiences of others; and followed the progress of the pilot study centers in their use of the equipment.

f. Major suggestions from these groups follow and are also presented in suggestions for further study and research:

   1) Seminars should be continued as long as the need exists so that teachers may learn about effective use of this equipment in the classroom.

   2) Controlled research should be undertaken to determine differences of achievement between classes using equipment for instruction in stenography and those classes which do not use such equipment.

   3) Teachers wishing to experiment with new teaching procedures or preparation of tapes should be allowed time in their schedules for planning and preparation of materials.

4) Questions raised concerning possible curriculum changes resulting from use of such equipment included: Will time for instruction be reduced? If learning time is reduced, what steps can be taken to improve transcription skill? What changes in credit should accompany reduction of learning time? Can first- and second-year shorthand be combined for some individuals? What kind of credit should be given in this situation?

5) Recognition of change in present facilities for teaching stenography was apparent. Such changes, according to those attending the seminars, involve:

   a) More classroom space to permit a teacher to reach the desk of every student comfortably.

   b) Larger desk top space for placement of equipment.

   c) Installation of typewriters in stenography classroom permitting earlier transcription instruction and practice.

   d) Need to classify room assigned to the teaching of stenography as a "special purpose" room, eliminating all activities not related to stenography and related subjects such as typewriting and office pratice.

   e) Reservation of some time in the schedule of room assignment mentioned in "c" for students to secure out-of-class practice with the equipment.

   f) More and better storage space, especially for equipment and tapes.

   g) Special wiring, if necessary, for equipment, including a master switch for all electrical outlets.

   h) Purchase of a listening station for each student thus promoting a situation in which individual instruction may be provided.

Objective #2: To determine teacher reaction to use of electronic equipment in the stenography classroom.

a. Early fears of equipment operation disappeared with practice and use of the equipment. Long before the beginning of the

second semester, project teachers felt capable of instructing others. There was common agreement, however, that teachers should be given thorough instruction prior to an attempt to use equipment in a class. Preferably, such instruction would permit individual practice.

b. Teachers need to know how to change tapes and how to use supplementary media such as recordplayers and tape recorders in conjunction with the classroom stenographic equipment.

c. Good "housekeeping" procedures should be applied to the care and maintenance of the equipment and tapes. These procedures should be cooperatively developed and practiced. This was stated as an outstanding need by all involved with the equipment.

d. Recognition of the potential advantages of regular classroom and out-of-classroom use of the equipment was apparent in the comments submitted.

e. Use in the classroom of the equipment during the project varied from daily use to only occasional use as a "special treat".

f. The equipment is a welcome teaching aid, especially when teachers have several periods of stenography scheduled for each day.

g. Teachers in the project anticipated using the equipment in advanced classes because of the experiences they had had in first-year work.

h. With properly prepared student assistants, teachers assumed the equipment could be used to aid a substitute in the case of teacher absence.

i. Better instructional manuals for equipment would be appreciated.

j. Teachers found the preparation of tapes very time-consuming but rewarding in terms of student response. Where such tapes are desirable, time should be allowed in the teacher's program.

k. The equipment was considered "relentless" in its push for continuing and increasingly rapid dictation. As a result,

students probably received more dictation than is normally given by the teacher.

l. Time now allowed between classes is insufficient to enter a classroom, select tapes, and set up equipment. Preferably, a teacher should have all classes in the room where the equipment is located or should have time allowed prior to teaching a class to prepare to use the equipment.

m. The potential for individual instruction with use of the equipment is still to be explored.

n. All business teachers should be introduced to the equipment in an effort to maintain good department relations.

o. The equipment and its use may be of use in the development of good public relations.

Objective #3: To determine student reaction to the use of electronic equipment in the stenography classroom.

a. Most students enjoyed the use of the equipment in class although some complained of boredom because of the tape dictation pattern and accent of the dictator.

b. Some students objected to pressure from the earphone. They were directed to use a single earpiece instead of the headpiece.

c. There was general appreciation at being given dictation at a speed within one's personal ability and developing pattern of growth. The identification of differing abilities within the class was not disturbing to the individual student.

d. Those students who learned to operate the equipment enjoyed the experience. Teachers reported they gave the equipment good care and were good operators.

e. Many students objected to not being able to use the equipment for personal practice because of conflicts in personal scheduling and room availability.

f. Classes as a whole responded well to tapes prepared by the teacher. In fact, some teachers felt such tapes might well precede the introduction to professionally prepared tapes.

g. Homework seemed better prepared when students knew they were to receive the same material as dictation from the equipment the next day in class.

h. In general, student achievement seemed to be above average during the period of the project. Students took dictation from the equipment willingly at speeds that teachers would have felt too high.

Objective #4: To determine desirable facilities--tapes, equipment and equipment storage, maintenance, space--for instruction and homework practice with electronic equipment in the stenography classroom.

Facilities: Tapes (Indexing, Filing)

a. Present tape lists and tape labels are confusing and inadequate indexes. (Since the project was completed, some improvement in indexing has been made through the use of color coding of tape containers and labels.)

b. Teachers would like to be able to locate parts of a taped lesson quickly and accurately. When the location of specific material can not be immediately determined, there is a tendency to play the tape from the beginning to the end. This may not be the procedure most needed by the class.

c. Teachers prefer single track tapes because faulty rewinding with the resulting confusion is less likely to occur.

d. Filing of tapes created problems. All of those involved with the use of the equipment, both teachers and student, must work out and follow a plan which will encourage correct filing so that finding will be efficient and convenient.

e. Sharing of tapes by several schools would be possible if a central file were established for this purpose.

f. In some schools, where there was definite separation of responsibility, teachers maintained individual libraries of tapes, i. e. beginning and advanced shorthand. Each teacher was then responsible for organization of tapes assigned to and used by him.

Facilities: Tapes (Uses)

a. Neither teacher nor students should leave tapes on equipment after use.

b. Tapes should be rewound to the point of beginning and stored in a pre-determined filing order. (Maintenance of a well-organized tape library with access by one and all was found to be difficult and time-consuming but absolutely necessary.)

c. Participating schools used tapes differently--extremes varied from 10-15 minutes every day in class to occasional use for motivation and speed.

d. Tapes were used to check homework and transcriptions, to improve reading speed of shorthand, and to provide specialized dictation for remedial instruction.

e. Tests and other materials peculiar to the local situation were taped by the teacher and reserved for future class use.

f. Tapes provided shorthand classes with the valuable experience of taking dictation from a variety of voices including those of community businessmen.

g. Tapes conserved the voice of the instructor and aided substitute teachers in cases of teacher absence.

h. One participant implied the value of taped instruction as follows: "tutorial service by the equipment is available at any date for any length of time without hardship on the teacher."

i. Out-of-class practice hours should be scheduled and publicized. Such a schedule should match students' available free free hours; out-of-class practice hours can then be made a requirement for some homework.

j. Tapes for medical, legal, office-style and other specialized dictation seem to be desired, particularly office-style.

k. Teachers wished to have the privilege of ordering blank tapes for experimental dictation in sufficient supply to build a library if this would seem desirable.

Facilities: Tapes (Preparation and Content)

a. Dictation of tapes by the teacher is very time-consuming but such tapes are appreciated by students.

b. Lack of sound-proofed quarters for such dictation at first seemed a handicap. Students, however, soon adjusted to realistic noises found on teacher-prepared tapes. Such realism is presently missing from most commercial tapes; should it be included?

c. Dissatisfaction was expressed with some of the content, the dictation pattern, and the dictators' accents on some of the commercially prepared tapes. No specific suggestions were made, but there seemed to be agreement that a variety of dictation patterns would be desirable.

d. Multi-channel tapes were found effective for first-year work where they were received in time for project participants to use them.

e. Vocabulary preview and review would be a welcome addition to the multi-channel tapes for beginning and intermediate shorthand.

f. It was discovered during the project that retaping taped materials is against copyright laws; and that dictating copyrighted materials on tape, even though such materials may be prepared for oral class dictation in person, is considered at the present time against the law of copyright.

Facilities: Equipment (Maintenance)

As this project was conducted and reported, improvement of equipment was taking place. Transistorized elements were replacing batteries in student stations. Wired equipment was being converted to wireless. Design was changing the looks and operable features of the console and storage facilities. Some equipment, including student listening stations, was becoming more compact. Insofar as the equipment used in this project was concerned, the following comments summarize adequately:

a. Wired equipment provided good reception when desks were not moved by janitors or students.

b. The loop for wireless equipment should be placed high enough on the wall to eliminate accidental or purposeful removal from the wall by students.

c. Student listening stations wore well even though some were accidentally dropped or knocked off desks.

d. Batteries were a source of annoyance, primarily because unequal classroom use caused uneven battery failure. The recommendation was that batteries be replaced in all equipment periodically regardless of known usage. Batteries did not keep well over the summer.

e. The importance of purchasing equipment which has responsible representation in the area of use was stressed. There should be a record of prompt and satisfactory service.

f. Where student stations were not fastened to the desks, teachers suggested that a definite procedure be established for distributing and collecting student stations and headsets. Such a procedure would eliminate waste of time and also protect the equipment.

g. Equipment not in repair contributes to the frustration of the student and to confusion of the teacher.

h. Earphones should be cleaned periodically--students can assist--and a fresh supply of the removable foam rubber inserts should be kept on hand. Students may desire to purchase the rubber inserts or perhaps the earphones themselves.

i. Where equipment is used by several teachers and students, one person should be responsible for supervising equipment and supplies with time alloted in his schedule for this purpose.

Facilities: Equipment (Mobility)

a. Although most equipment is movable, scheduling equipment for full usage prevents out-of-class praticce by students.

b. Wheels on most equipment are too small for easy movement.

c. In most cases, equipment was used in only one room.

d. Removal of doorsills by one school in rooms being used to teach stenography permitted reasonably convenient movement of wireless equipment from one room to another. "Loop" installation was required in the second room.

Facilities: Equipment (Storage)

a. In general, storage cabinets accompanying equipment used were unsatisfactory. They were of the wrong dimensions for equipment and materials being stored. In many cases, shelves were to low and too deep for easy access.

b. Equipment which could be completely closed and locked when not in use received approval.

Facilities: Equipment (Room Assignment)

a. Heavy usage of rooms in which equipment was stored prevented out-of-class practice.

b. Preferably, only business education skill classes should be assigned to the room in which equipment for instruction in stenography is located.

c. Facilities should be available which will permit definite assignment of students to a practice period with the equipment several times a week. This procedure is a necessary adjunct to improved learning of stenography.

   If stenography classes fill the room in which equipment is housed, more than one set of equipment might be considered.

d. If self-instruction in stenography is to be considered, space and supervision must be provided for individual practice during, before, and after school hours.

Objective #5: To determine what variations in teaching method and techniques evolve with the use of electronic equipment in the stenography classroom.

In the reports submitted, reference is made to a proper "mix" of teacher and recorded dictation; to variety within lesson procedure; to wise use of taped materials; and to individual supervision of students. It was emphasized that the equipment by itself will not make a good teacher but that a good teacher will be able to begin to teach individuals rather than a class; that the creative teacher will be freed to develop techniques which others may also be able to apply. In summary:

a. Many phases of teaching stenography with the equipment are similar to teaching stenography without the equipment. The essential difference is that with equipment, the emphasis can really be placed on teaching the individual. Therefore, concepts of teaching stenography must be reconsidered, applying principles of individual instruction and learning.

b. "The teacher still has to teach where (sic) she taught without the equipment. However, where she drilled, dictated, or tested without the equipment, she can usually substitute the equipment for her voice."

c. "Keeping students busy" should not be the objective of use of such equipment. Lessons must be prepared with very specific objectives and then combined with a definite time schedule for successful accomplishment.

d. Changing of tapes should be kept to a minimum within one class period.

e. It is believed that homework merely copied from the text is not as effective as homework taken from taped dictation. This is a definite departure from familiar techniques.

f. The teacher can expect that more individual teacher-student relationships develop as the teacher is freed to observe student work habits, penmanship, handling of the notebook, posture, and individual progress.

g. The teacher needs to check all students to be certain the indifferent and the fearful students do not "coast" at a rate that is easy rather than challenging to them personally.

h. More dictation is probably given with equipment as an aid than can be given orally by the teacher. The "machine is unalterably objective" and is set at an "unrelenting pace" which students accept. It never permits the student to draw his outlines.

i. Preview and review of outlines becomes more complicated as instruction becomes more individualized.

j. Follow-up of a student's production is an important feature in managing a class using multi-channel equipment. What errors are being made? What speed is being taken? What plans does the student have for study? Is the student aware of his own potential? Is he working to capacity? Is he striving too much? Are other skills holding him back, such as English, composition, spelling? Does he understand how to use the equipment or is he afraid of it? Is he bored? Is he capable of planning his own study program?

k. Direct observation of the student by the teacher at the time of dictation was accepted by the student. This is contrary to present-day methodology which states that "prowling" is disturbing to the learner.

l. Students can more easily be put to work upon entrance to the room while the teacher is busy with class routines when equipment is in use provided of course that the teacher can reach the room in time to place a tape on the machine.

m. Homework can be reviewed either through dictation practice or as a reading exercise using the equipment as an aid.

Objective #6: To determine the extent to which electronic equipment may be employed to provide individual instruction for (a) the gifted student; (b) the slower learner; (c) the potential drop-out; (d) the absentee.

Hints of the potential value of the equipment for development of individual abilities are evident among the following statements.

Extensive exploration, however, was not possible in the limited time of the project.

a. Better students said the equipment provided a challenge to try to take more dictation at higher speeds than they normally might have done; that it also provided greater opportunity because of the availability of the multi-channel dictation tapes.

b. The slower student was happy because he could take and get "something."

c. The "lost" student became the "slow" student--one who is making some progress.

d. Homework seemed to be better prepared in order to be ready for the taped homework dictation in class.

e. Repeat and absentee tests could be given individually during a class period without disturbing the rest of the class.

f. Speed tests could be given as the student became ready to be tested.

g. Immediate readback with the tape revealed to the student how much dictation he had secured or missed; it also assisted in improving the student's rate of reading response.

h. "Peripheral distraction was eliminated or corrected.... What remained was a one-to-one teacher-student ratio that results psychologically from the equipment and creates an atmosphere of intense concentration."

i. "The shorthand laboratory actually places a whole series of auxiliary teachers to work in the same classroom--an effective teaching team together with the regular classroom teacher."

j. Pupils who might have been reluctant to seek the teacher's aid in a regular classroom requested help as the teacher was freed from former responsibilities.

k. Preparation of daily lesson guides, including preview and review of dictation materials, to be used with tapes,

would assist all students to progress at their own rates.

Objective #7: To suggest possible research in the use of electronic equipment in the stenography classroom.

a. Development of taped instructional materials for teaching transcription skills.

b. Development of remedial tapes for grammar and composition skills needed by many students in preparation for transcription.

c. Experimentation with the present popular minute-spiral speedbuilding pattern as opposed to some other pattern. (Student suggestions included (1) provision of a pause at the end of each period of dictation; (2) provision of preview of outlines in new dictation; (3) use of longer dictation periods for practice.)

d. Exploration of the extent to which study of stenography can become self-directed with:

1) the aid of proper equipment
2) regular opportunity to use equipment for practice
3) tapes to learn stenography; to improve English; to build speed

Such study should be undertaken with the average stenography class including slow learners. Some questions such a project might answer are:

1) Can learning time for some be shortened? for others lengthened? without confusion to the class as a whole?
2) What types of supplementary teaching materials are desirable such as tapes, transparencies, individualized learning materials?
3) What goals should be set so that credit granted equals level of achievement?

e. Experimentation in the area of teacher education, particularly in the intensification of the study and application of individualized instructional method.

f. Development of tapes for specialized vocabularies which can be used on an individual basis.

g. Experimentation with the overhead projector and/or skill-builder in combination with the multi-channel equipment.

Summary

The objectives of this study were met. Over 200 shorthand teachers and department chairmen from approximately 175 schools had a personal opportunity to consider the use of multi-channel equipment in the stenography classroom, plus hands-on experience with the equipment. As the major types of media were represented in the study, those attending the seminar had the benefit of determining for themselves, by frank discussion and experimentation, the advantages and disadvantages of each type.

As a result of the project, nine high schools and three colleges were well equipped with multi-channel equipment and tapes for stenographic instruction.

Furthermore, the project plan of procedure required coordinated activity among high schools, colleges, and the Vocational Division of the New Jersey State Department of Education, proving that such coordination is not only possible, but workable.

Initial follow-up of schools participating in the project (admittedly only partial) indicates that students who worked with the equipment in 1966-67 are doing well in 1967-68. The teachers in these schools feel the equipment is effective in their classes; or, having been scheduled to teach stenograpny in rooms without equipment, they are anticipating arrangements which will make it possible for them to share the equipment with others. Teachers and administrators in these schools are doing what is possible to free classrooms with equipment for homework preparation by students. Purchase of additional equipment is being considered where school demand seems to warrant such purchase. No school so far surveyed has indicated disappointment with the use of the equipment, only concern with limited school facilities which prevent more intensive use of the equipment by those who need it.

The initial follow-up of seminar enrollees made at the same time as the above survey indicates that they too 1) feel they are using the equipment more effectively; 2) are anticipating the purchase of equipment; 3) are still appreciative of the opportunity they had to learn to select such equipment more intelligently; 4) deplore the lack of space for full use of the equipment, especially for homework preparation; and 5) express a wish for more time in their programs to plan to do the teaching they know should be possible with the equipment.

The project was ambitious in the wording of its first six objectives. It was impossible in the short time the project ran--one year--to "determine" absolute answers to any one of the problems stated. The project observations, however, do suggest possible answers to the problems considered and do define areas for further exploration.

Each of the suggestions in the statement for Objective #7--"possible research in the use of electronic equipment in the stenography classroom"--is significant. Perhaps the two most pressing are: 1) further investigation into self-directed study (and into resulting changes required in methodology). Such study would assist the beginner to learn to progress at his own pace. Everyone agrees this should be done and can be done. 2) Development of taped aids for transcription which would encourage and make possible vocational use of the symbols the student learns in beginning study.

It is to be hoped that individuals with ideas as to how these problems may be approached and solved will be given the opportunity (time and money) to try to do so.

APPENDIX A

Participating High Schools

SCHOOL	PERSONNEL	EQUIPMENT
(Cooperating with Montclair State College)		
Bloomfield High School Bloomfield, New Jersey	Richard C. Stout, Chairman Jean DeVries (Mrs.) Ruth Harvey (Mrs.)	EFI
Parsippany-Troy Hills High School Parsippany, New Jersey	Joan McCoola (Miss), Chairman Maryann Duva (Miss) Mary May (Mrs.)	Norelco
Scotch Plains-Fanwood High School Scotch Plains, New Jersey	George Esposito, Chairman	Norelco
(Cooperating with Rider College)		
Atlantic City High School Atlantic City, New Jersey	William Ritchie, Chairman Elsie Anderson (Mrs.) Barry Tracy (Mrs.)	Switchcraft
Florence Township Memorial High School Florence, New Jersey	Helen Masick (Miss), Chairman Eileen L. Travesos (Mrs.)	Switchcraft
Woodrow Wilson High School Camden, New Jersey	Ethel Reeder (Miss), Chairman Evelyn DeKoskey (Mrs.)	Switchcraft
(Cooperating with Trenton State College)		
Hamilton Township High School West Trenton, New Jersey	Ralph Jones, Chairman Maureen O'Brien (Miss)	EFI
Princeton High School Princeton, New Jersey	Richard E. Borger, Chairman Catherine Avery (Mrs.)	EFI
Trenton Central High School Trenton, New Jersey	Oscar Gibson, Chairman Carmela Imbalzano (Miss)	EFI